

BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 3

DECEMBER 1956

PART 16

INSTITUTE NEWS

Institute's New Headquarters

Sixth List of Donations

The Council gratefully acknowledges the following additional donations to the funds of the Institute, towards the purchase of the lease of 17 Belgrave Square, London, S.W.1, as a new Headquarters of the Institute and of its equipment.

Further donations from companies in the metallurgical and engineering industries, and from individual members, will be welcomed.

	£	s.	d.
Aston Chain and Hook Co., Ltd.	50	0	0
Baker Platinum (Precious Metals Division, Engelhard Industries, Ltd.)	50	0	0
Morgan Crucible Co., Ltd.	50	0	0
Incandescent Heat Co., Ltd.	42	0	0
Christie, Mr. J. L. (U.S.A.)	9	0	0
Blazey, Mr. Clement (Australia)	4	4	0
Brace, Mr. A. W.	1	1	0
Nutting, Dr. J.	1	1	0

Informal Discussion on Degreasing

Under the auspices of the Metallurgical Engineering Committee, an all-day Informal Discussion on "Degreasing" will be held in the University, Edgbaston, Birmingham 15, on Wednesday, 27 February 1957.

Lunch (price 6s. 6d.) can be arranged in the University Refectory for those requiring it. Application for lunch tickets, accompanied by the appropriate remittance, must be received by the Institute *not later than 19 February*.

New Corresponding Members to the Council

Australia

Professor H. W. WORNER, Professor of Metallurgy, University of Melbourne, has accepted an invitation to serve as one of the Corresponding Members to the Council for Australia in place of Dr. H. K. Worner, whose period of office has expired.

Canada

Mr. G. M. YOUNG, Technical Director of the Aluminium Company of Canada, Ltd., 1700 Sun Life Building, Montreal, has accepted an invitation to serve as Corresponding Member to the Council for Canada for a period of three years in place of Professor G. Letendre of Laval University, Quebec, whose term of service recently expired.

South Africa

Professor A. J. GOULD, Professor of Engineering at the University of Natal, Howard College, Durban, South Africa, has accepted an invitation to serve as Corresponding Member to the Council for South Africa for a period of three years. He succeeds Professor L. Taverner, of the University of the Witwatersrand whose term of office has expired.

U.S.A.

Dr. KENT R. VAN HORN, Director of Research of the Aluminum Company of America, P.O. Box 772, New Kensington, Pa., U.S.A., has accepted an invitation to serve for a period of three years as one of the Corresponding Members to the Council for the United States in place of Professor R. F. Mehl, who has completed his term of office.

The warm thanks of the Council have been expressed to the retiring Corresponding Members for the valuable services they have rendered to the Institute.

Papers and Notes for Publication in the "Journal"

The Council, through the Metallurgical Engineering Committee, wishes to encourage the submission of brief papers or notes, for publication in the *Journal*, describing specially developed items of equipment which have metallurgical or engineering novelty.

Those (members or non-members) who are in a position to offer such papers or notes are requested to communicate with the Secretary when the question arises.

Election of Members

The following 5 Overseas Sustaining Members, 31 Ordinary Members, 5 Junior Members, and 5 Student Members were elected on 17 October 1956:

As Overseas Sustaining Members

- COMPAGNIE DES MÉTAUX D'OVERPELT-LOMMEL ET DE CORPHALIE S.A., 54 rue des Fabriques, Bruxelles, Belgium.
- HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO, THE, 620 University Avenue, Toronto, Ont., Canada.
- ORENDA ENGINES, LTD., Box 4015, Terminal "A", Toronto, Ont., Canada.
- TRÉFILIERIES ET LAMINOIRS DU HAVRE, 28 rue de Madrid, Paris (8^e), France.
- VISSERIES ET TRÉFILIERIES RÉUNIES S.A., 2 Avenue Général Leman, Haren, Belgium.

As Ordinary Members

- BISHOP, Tom, B.Met., F.I.M., Editor, *Metal Treatment and Drop Forging*, 17/19 John Adam Street, Adelphi, London, W.C.2.
- BOURQUELOT, Daniel, Ing., Directeur du Département de la Métallurgie du Cuivre et de l'Aluminium, Tréfileries et Laminiers du Havre, 28 rue de Madrid, Paris (8^e), France.
- BRACE, Gordon, M.Sc., Assistant Administrative Officer, Management Courses, British Iron and Steel Federation, Hoyle Street, Sheffield 3.
- BUSCHMANN, Ewald Ferdinand, Dr.-Ing., Technischer Leiter, Aluminiumwerke Göttingen G.m.b.H., Hannoverstr., Göttingen, Germany.
- DE BEL, Albert, Ing., Ingénieur, Visseries et Tréfileries Réunies S.A., Division Laminiers, 2 Avenue Général Leman, Haren, Belgium.
- DESBORDES, Joseph, Ing., Administrateur-Directeur Général, Tréfileries et Laminiers du Havre, 28 rue de Madrid, Paris (8^e), France.
- ESMONDE, Roderic Anthony, A.M.I.Mech.E., M.I.Mar.E., Development Manager, The London Aluminium Co., Ltd., Westwood Road, Witton, Birmingham 6.
- FLETCHER, Joseph Edward, Deputy Foundry Manager and Metallurgist, The Delta Metal Co., Ltd., Dartmouth Street, Birmingham 7.
- FLOYD, James C., F.R.Ac.S., Vice-President Engineering, Avro Aircraft, Ltd., Box 4004, Terminal "A", Toronto, Ont., Canada.
- GRINER, Charles Albert, B.Sc., Vice-President and Chief Engineer, Orenda Engines, Ltd., Malton, Ont., Canada.
- LIPTRON, Albert, Engineering Agent, 289 Hanover Street, Sheffield.
- LORD, William Burton Housley, M.A., M.Sc., Superintendent of Metallurgy, Atomic Weapons Research Establishment, U.K. Atomic Energy Authority (Weapons Group), Aldermaston, Berks.
- MCGREGOR, (Miss) Helen Patricia, B.A., Librarian, Atomic Energy of Canada, Ltd., Chalk River, Ont., Canada.
- MEETHAM, Geoffrey William, B.Sc., Metallurgist, Research Laboratory, Aero Engine Division, Rolls Royce, Ltd., Derby.
- MITCHELL, William James John, Assistant Works Metallurgist, Guest Keen Iron and Steel Co., Ltd., Cardiff.
- NEKERVIS, Robert James, E.Met., Chief, Metallurgical Engineering, Tin Research Institute, Inc., 492 West Sixth Avenue, Columbus 1, Ohio, U.S.A.
- QUINTIN, Albert André Joseph, Ing., Directeur Général, Compagnie des Métaux d'Overpelt-Lommel et de Corthalic, Overpelt (Limbourg), Belgium.
- RAMASWAMI, B., B.Sc., D.I.I.Sc., Assistant Foreman Metallurgist, Material Testing Department, Machine Tool Prototype Factory, Ambarnath, (C. Rly.), India.
- RUNNALLS, Oliver John Clyde, M.A.Sc., Ph.D., Head, Fuel Development Branch, Atomic Energy of Canada, Ltd., Chalk River, Ont., Canada.
- SAHNAZAROV, Professor Artemije, Dipl.-Ing., Professor of Metallurgy and Mechanical Technology and Director of the Institute of Technology, Faculty of Technology, University of Zagreb, Zagreb, Yugoslavia.
- SCHNEIDER, Philipp, Dipl.-Ing., Geschäftsführer, Verein Deutscher Giessereifachleute, Sohnstrasse 70, Düsseldorf, Germany.
- SIMISTER, Ernest, B.Sc., Ph.D., F.I.M., Chief Metallurgist, Kirkstall Forge Engineering, Ltd., Leeds 5.

- SMALLMAN-TREW, Richard, B.Sc., A.R.S.M., Chief Metallurgist, Avro Aircraft, Ltd., Box 4004, Terminal "A", Toronto, Ont., Canada.
- SMITH, Reginald William, B.Sc., Ph.D., Research Worker in Metal Physics, Department of Metallurgical Engineering, University of Toronto, Toronto 5, Ont., Canada.
- STANLEY, James K., B.S., Ph.D., Metallurgist, Crucible Steel Company, 234 Atwood Street, Pittsburgh 13, Pa., U.S.A.
- STEAD, David Darwin, A.S.T.C., Chief Metallurgist, Austral Bronze Company Pty., Ltd., Alexandria, N.S.W., Australia.
- VERLINDEN, Armand, Ing., Ingénieur-Chef de Fabrication, Visseries et Tréfileries Réunies S.A., Division Laminiers, Haren, Belgium.
- VOLK, Karl Erich, Dr.-Ing., Geschäftsführer, Nickel-Informationsbüro G.m.b.H., Steinstrasse 17, Düsseldorf, Germany.
- WAKELIN, Richard John, B.Sc., Ph.D., A.Inst.P., A.I.M., Atomic Weapons Research Establishment, U.K. Atomic Energy Authority (Weapons Branch), Aldermaston, Berks.
- WALKER, Robert Frederick, B.Sc., Metallurgist, The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto, Ont., Canada.
- WARD, Charles Henry, Foundry Manager and Metallurgist, The Delta Metal Co., Ltd., Dartmouth Street, Birmingham 7.

As Junior Members

- BANNISTER, Gerald Harwood, B.Met., Assistant Experimental Officer, Metallurgy Division, Atomic Energy Research Establishment, Harwell, Berks.
- PHILLIPS, Rodney, B.Sc., Research Physicist, Associated Electrical Industries, Ltd., Research Laboratory, Aldermaston, Berks.
- SANDVEN, Ole-Andreas, Siv.ing., Forsker III, Forsvarets Forsknings-institutt, Avd. for Kjemi, Kjeller, Lindstrom, Norway.
- SMITH, Edwin, B.Sc., Research Metallurgist, Associated Electrical Industries, Ltd., Research Laboratory, Aldermaston, Berks.
- WILLANS, Gordon Ralph, Laboratory, Arthur Lee and Sons, Crown Works, Attercliffe, Sheffield 9.

As Student Members

- BHASIN, Yash Pal, B.Sc., L.I.M., Metallurgical Department, Leyland Motors, Ltd., Leyland, Lancs.
- FORD, James Arthur, B.S.E., Graduate Student in Metallurgical Engineering, University of Michigan, Ann Arbor, Mich., U.S.A.
- MALE, Alan Thomas, Undergraduate, Department of Metallurgy, University of Birmingham.
- MAY, Michael John, Undergraduate, Department of Metallurgy, University of Sheffield.
- TOYNE, Brian, Apprentice, Saunders-Roe Ltd., East Cowes.

The following 2 Overseas Sustaining Members, 9 Ordinary Members, 3 Junior Members, and 46 Student Members were elected on 14 November 1956:

As Overseas Sustaining Members

- BROKEN HILL ASSOCIATED SMELTERS PTY., LTD., THE, 360 Collins Street, Melbourne C.I, Vic., Australia.
- COMPAGNIE FRANÇAISE DES MÉTAUX (S.A.), 7 rue du Cirque, Paris (8^e), France.

As Ordinary Members

- AAS, Steinar, Berging., M.Sc., Metallurgist, Institutt for Atomenergi, P.O. 175, Lillestrom, Norway.
- GRIFFIN, (Mrs.) Ruth O., Librarian, College of Engineering, Marquette University, 1515 West Wisconsin Avenue, Milwaukee 3, Wis., U.S.A.
- HENSLER, John Howard, B.Met.E., Rylands' Research Scholar, University of Melbourne.
- PFAU, Alex R., Ing., Sales Manager, A.G. Oederlin et Cie., Baden, Switzerland.
- POPE, Professor Joseph Albert, Ph.D., D.Sc., Wh.Sc., M.I.Mech.E., Professor of Engineering and Head of the Departments of Civil and Mechanical Engineering, University of Nottingham.
- RAE, Dennis Malcolm, B.Sc., Metallurgist, Metallurgical Laboratory, Engineering Department, H.M. Dockyard, Malta G.C.
- ROSECRANS, Stanley Alfred, M.S., Manager, Metallurgical Engineering, Materials Engineering Department, Westinghouse Electric Corp., East Pittsburgh, Pa., U.S.A.
- WALKER, Gilbert Alexander, B.Sc., A.R.S.M., A.M.I.M.M., Director, Johnson and Sons Smelting Works, Ltd., Brimsdown, Enfield, Middx.
- ZIEGLER, Walter Bruno, Vizedirektor Technischer Leiter, A.G. Oederlin et Cie., Baden, Switzerland.

As Junior Members

- BARBER, John Brian, B.Sc., L.I.M., Research Metallurgist, The Mond Nickel Co., Ltd., Development and Research Department, Wiggin Street, Birmingham 16.
- MARSH, John Dennis, B.Sc., Metallurgist, Telegraph Construction and Maintenance Co., Ltd., Manor Royal, Crawley, Sussex.
- WEAVER, Jeffrey, B.S., U.S. 51342097, "A" Btry, 557 FAMsl Bn., Bleidorn Kaserne, Ansbach, Germany.

As Student Members

- ALDRED, Anthony Thomas, B.Sc., Research Student, Department of Physical Metallurgy, University of Birmingham.
- ALLEN, Terence William, Student, Department of Metallurgy, Battersea College of Technology, London.
- BLANKENBURGS, Gunars, Undergraduate, King's College, University of Durham, Newcastle-on-Tyne.
- BROWN, John Alan, M.Sc., Research Student, Department of Physical Metallurgy, University of Birmingham.
- CHARIG, John Marcus, B.Sc., Post-Graduate Research Student, Royal School of Mines, Imperial College of Science and Technology, London.
- CLARKE, Herbert, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.
- COLSON, Richard George, Undergraduate, Department of Metallurgy, University of Nottingham.
- CROCKER, Alan Godfrey, B.Sc., A.R.C.S., Research Student, Department of Metallurgy, University of Sheffield.
- DAVIS, Keith Gordon, Undergraduate, Department of Metallurgy, University of Birmingham.
- FOTHERBY, Allan Henry, Student of Metallurgy, Battersea College of Technology, London.
- GRUBB, Douglas, Undergraduate, Department of Metallurgy, University of Nottingham.
- HAHN, Walter C., B.S., Graduate Student, Box 21, College of Mineral Industries, Pennsylvania State University, University Park, Pa., U.S.A.

- HALFORD, Frank Bastin, Undergraduate, King's College, University of Durham, Newcastle-on-Tyne.
- HARRISON, Brian Granville, Student of Metallurgy, Birmingham College of Technology, and Laboratory Assistant, Imperial Chemical Industries, Ltd., Metals Division, Birmingham 6.
- HARRISON, William, Undergraduate, Department of Metallurgy, University College of Swansea.
- HEAP, Peter Frederick, Undergraduate, Faculty of Technology, University of Manchester.
- HEDLEY, James Armstrong, Undergraduate, King's College, University of Durham, Newcastle-on-Tyne.
- HEDLEY, Raymond, Undergraduate, King's College, University of Durham, Newcastle-on-Tyne.
- HEWSTON, David Arthur, Student of Metallurgy, Birmingham College of Technology, and Laboratory Assistant, Imperial Chemical Industries, Ltd., Metals Division, Birmingham 6.
- HODGES, David Leslie, Undergraduate, Department of Metallurgy, University of Nottingham.
- HUBBARD, Patrick Robert, Undergraduate, Department of Metallurgy, University of Nottingham.
- HUNNS, David Walter Housden, Student, Department of Metallurgy, Battersea College of Technology, London.
- JONES, Terence John Brian, Undergraduate, Department of Metallurgy, University College of Swansea.
- JORDAN, David Edmund, B.Sc., Metallurgist, Plant Control Department, Northern Aluminium Co., Ltd., Rogerstone, Newport, Mon.
- LONGSON, Brian, Undergraduate, Department of Metallurgy, University of Manchester.
- LOW, Michael, Junior Metallurgist, Baker Platinum Division, Engelhard Industries, Ltd., Baker Laboratories, 2 Green Lane, Datchet, Bucks.
- MC EWAN, Keith John Bruce, Undergraduate, Department of Metallurgy, University of Birmingham.
- McKEE, Frank, Undergraduate, Department of Metallurgy, University of Nottingham.
- MARSH, David John, Student of Metallurgy, Birmingham College of Technology, and Assistant Metallurgist, Brooke Tool Manufacturing, Ltd., Warwick Road, Greet, Birmingham.
- MAY, Geoffrey Harold, Undergraduate, Department of Metallurgy, King's College, University of Durham, Newcastle-on-Tyne.
- MOON, John Robert, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.
- MOYSES, Frederick Charles, Student of Metallurgy, College of Technology, Manchester.
- NANCARROW, Donald John Francis, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.
- OGRAM, Geoffrey Reginald, Undergraduate, Department of Metallurgy, University of Birmingham.
- OWEN, Mervyn, Undergraduate, Metallurgy Department, University College of Swansea.
- PARTRIDGE, Geoffrey James, Undergraduate, Department of Metallurgy, University of Nottingham.
- PERCY, Arthur John, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.
- PHILLIPS, Edryd, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.

PERSONAL NOTES

RICHARDS, Edward Gordon, B.Sc., Metallurgist, The Mond Nickel Co., Ltd., Development and Research Department Laboratory, Wiggin Street, Birmingham 16.

SHAW, Peter Brian, Undergraduate, Department of Metallurgy, University College of Swansea.

SILVERSTONE, C., Undergraduate, Department of Metallurgy, University of Birmingham.

SMITH, John, Undergraduate, Department of Metallurgy, University of Nottingham.

SQUIRES, Roy Leslie, Undergraduate, Department of Metallurgy, University of Nottingham.

STOTT, Alan Leslie, Undergraduate, Department of Metallurgy, University of Sheffield.

TROTTER, Harold George, Undergraduate, Department of Metallurgy, University College of South Wales and Monmouthshire, Cardiff.

WOLTON, Peter Alan, Undergraduate, Department of Metallurgy, University of Manchester.

PERSONAL NOTES

MR. B. E. BLANCHARD has left the English Electric Co., Ltd., and has taken a post in the Research Department of the English Steel Corporation, Ltd., Sheffield.

MR. A. W. BRACE, of Aluminium Laboratories, Ltd., Banbury, has received a City and Guilds Insignia Award in Technology for a thesis on "The Influence of Chemical Composition and Metallurgical Structure on the Response to Brightening and Anodizing".

DR. B. R. COLES has returned to Imperial College, London, after a period as Visiting Professor at the Carnegie Institute of Technology, Pittsburgh, Pa.

MR. R. COPEMAN has taken up an appointment with McKechnie Brothers, Ltd., Aldridge, Staffs.

DR. C. R. CUPP is now engaged as Senior Metallurgist in the Research and Development Laboratories of the Canadian Westinghouse Co., Ltd., Hamilton, Ont.

MR. R. V. DAY has joined the Metallurgy Research Department of C. A. Parsons and Co., Ltd., Newcastle-upon-Tyne.

DR. E. L. DUPUY, Past-President of the Société Française de Métallurgie, has received the honour of Officier de la Légion d'Honneur. The medal was presented to him at a ceremony in Paris on 23 October, in the presence of many French and foreign friends.

DR. C. EDELEANU has left the Brown-Firth Research Laboratories to join the Tube Investments Research Laboratories, Hinxton Hall, Cambridge.

MR. R. R. FORSCHER has left Aviation Electric, Ltd., Montreal, and is now employed as a Development Engineer at the Arvida Works of The Aluminium Company of Canada, Ltd.

MR. D. J. FRICKER has been transferred from the Research Laboratories to the Latchford Locks Works of The British Aluminium Co., Ltd.

M. ROBERT GADEAU received the Sainte-Claire-Deville Medal of the Société Française de Métallurgie at its Autumn Meeting in Paris on 23 October.

MR. G. HAIM has been appointed Managing Director of a newly formed company Rediweid-Oerlikon Electrodes, Ltd., whose works will be at Crawley, Sussex.

DR. T. A. HENDERSON is at present on leave in England from Rho-Anglo Mine Services, Ltd., Kitwe, N. Rhodesia. He is returning to N. Rhodesia in January to take up the position of Chief of the Metallurgical Study Section of Rhokana Corporation, Ltd., N'kana.

MR. HALLSTEIN KJOLLES DAL has been appointed Research Metallurgist at the Central Institute of Industrial Research, Oslo.

DR. BØRGE LUNN (Corresponding Member to the Council for Denmark) has received the Captain Alfred E. Hunt Memorial Award of the American Society of Lubrication Engineers for his paper on "Evaluating Bearing Materials under Boundary Lubrication", which was presented to a meeting of the Society last year.

PROFESSOR R. F. MEHL received the Le Chatelier Medal of the Société Française de Métallurgie at its Autumn Meeting in Paris on 23 October 1956. Afterwards, he delivered a lecture on "La théorie de la décomposition de l'austénite".

MR. D. A. RYDER has left Joseph Lucas (G.T.E.), Ltd., and is now employed at the Royal Aircraft Establishment, Farnborough, Hants.

MR. J. A. SARTELL has left the University of Wisconsin to become Senior Research Metallurgist at the Minneapolis-Honeywell Research Centre, Hopkins, Minn.

MR. J. SAVAS has left the Alloy Research Co., South Haven, Mich., and is now with the Winters Foundry and Machine Co., Inc., Canton, Ohio.

M. E. SENGIER, the President of the Permanent Committee of the Union Minière du Haut Katanga in Brussels, recently received from the British Ambassador in Belgium the insignia of a Knight Commander of the Order of the British Empire, which has been conferred on him by Her Majesty in recognition of valuable services to Britain and to Anglo-Belgian relations.

MR. R. SMITH has left the University of Melbourne and is to spend two years in the Metallurgy Division of the Atomic Energy Research Establishment, Harwell.

MR. H. VELTMAN has taken up an appointment with Sherritt Gordon Mines, Ltd. He is working on behalf of the firm at the University of British Columbia, Vancouver.

MR. R. M. WOODWARD has left the Fairey Aviation Co., Ltd., and is now Technical Assistant to the Foundry Manager, Distington Engineering Co., Ltd., Workington, Cumberland.

PROFESSOR DR. A. VON ZEERLEDER has received the first award of the Donegani Gold Medal of the Schweiz. Verband für die Materialprüfungen der Technik.

Deaths

The Editor regrets to announce the deaths of:

MR. M. C. ENGERS, Chairman and Managing Director of M. C. Engers, Ltd., on 3 November 1956.

MR. PHILIP VASSAR HUNTER, C.B.E., a Director of British Insulated Callender's Cables, Ltd., on 22 October 1956. He served as a Vice-President of the Institute from 1951 to 1954.

OTHER NEWS

Southampton Metallurgical Society

The metallurgical interests of the Southampton area are now so considerable that a group of metallurgists has formed the Southampton Metallurgical Society, which has already held its first meeting. The President of the Society is Dr. O. P. Einerl, and the Honorary Secretary is Mr. S. W. Hallwood, Folland Aircraft, Ltd., Hamble, Hants., from whom particulars of membership can be obtained.

Conference on Crystal Dynamics

A Conference of the Physical Society on Crystal Dynamics will be held at Queen Mary College, University of London, on Monday and Tuesday, 7 and 8 January 1957.

In general, the first day will be devoted to non-metals and the second day to metals. On both days there will be a rough division between equilibrium properties (thermodynamic properties such as specific heat, &c.) and non-equilibrium properties (thermal conductivity and electrical properties, &c.). Supraconductivity as related to lattice dynamics will be included on the second day.

The sessions will be introduced by papers of a general character lasting 20-30 minutes, and there will then be a number of shorter contributions, with sufficient time for full discussion. The Chairmen for the sessions will be Sir Francis Simon, F.R.S., Professor R. E. Peierls, F.R.S., Professor H. Jones, F.R.S., and Professor N. F. Mott, F.R.S. Introductory talks will include those given by Dr. M. Blackman (Imperial College, London) and Dr. E. H. Sondheimer (Queen Mary College, London).

The meeting is open to non-members, and inquiries should be addressed to the Physical Society, 1 Lowther Gardens, Prince Consort Road, London, S.W.7, marked for the attention of Miss Miles.

DIARY

Local Sections and Associated Societies

- 3 January. **Birmingham Local Section.** Discussion on "Timber *versus* Metals". Opening speakers: D. O. Reece, W. E. Ballard, and Miss Dorothy Pile. (Birmingham Exchange and Engineering Centre, Stephenson Place, Birmingham, at 6.30 p.m.)
- 3 January. **Leeds Metallurgical Society.** "Some High-Temperature Properties of Copper Alloys", by Dr. J. P. Dennison. (Large Chemistry Lecture Theatre, The University, Leeds 2, at 7.15 p.m.)
- 3 January. **London Local Section.** "The Metallurgical Challenge of Nuclear Power", by Dr. H. K. Hardy. (4 Grosvenor Gardens, London, S.W.1, at 6.30 p.m.)
- 8 January. **Oxford Local Section.** "Gases in Metals", by Dr. C. E. Ransley. (Cadena Café, Cornmarket Street, Oxford, at 7.0 p.m.)
- 10 January. **Liverpool Metallurgical Society.** Student Prize Competition, followed by a visit to the Metallurgy Department of the University. (Joint meeting with the University of Liverpool Metallurgical Society.) (The University, Liverpool, at 7.0 p.m.)

- 15 January. **South Wales Local Section.** "Fatigue", by Major P. Litherland Teed. (Department of Metallurgy, University College, Singleton Park, Swansea, at 6.45 p.m.)

[Note: The President, accompanied by the Secretary, will pay an official visit to the Section at this meeting.]

- 16 January. **Manchester Metallurgical Society.** "Physical Chemistry in Extraction Metallurgy", by Dr. F. D. Richardson. (Manchester Room of The Central Library, Manchester, at 6.30 p.m.)
- 17 January. **Birmingham Local Section.** "Some Metallurgical Aspects of a Gas Turbine Engine", by S. Heslop. (Professional Bodies Suite, College of Technology, Gosta Green, Birmingham, at 6.30 p.m.)
- 21 January. **North East Metallurgical Society.** "The Industrial Development of Tees-side", by J. C. H. Booth. (Cleveland Scientific and Technical Institution, Middlesbrough, at 7.15 p.m.)
- 21 January. **Sheffield Local Section.** "Research Work in the Department of Metallurgy, University of Sheffield", by Professor A. G. Quarrell. (Engineering Lecture Theatre. The University, St. George's Square, Sheffield 1, at 7.30 p.m.)

Other Societies

- 9 January. **Society of Chemical Industry, Corrosion Group.** "Corrosion Problems in Nuclear Power Production", by Dr. A. B. McIntosh. (Society of Chemical Industry, 14 Belgrave Square, London, S.W.1, at 7.30 p.m.)
- 10 January. **East Midlands Metallurgical Society.** "The Use of Radioactive Isotopes in Industry", by Dr. A. D. Merriman. (Nottingham and District Technical College, Nottingham, at 7.30 p.m.)
- 10 January. **Institute of British Foundrymen, Beds./Herts. Section.** "Reduction of Dust in the Production of Loose Pattern Moulds by Core Assembly", by E. H. Beech. (W. H. Allen, Sons and Co., Ltd., Bedford, at 7.30 p.m.)
- 15 January. **Institute of British Foundrymen, East Anglian Section.** "Foundry Developments", by D. Killingworth. (Lecture Hall, Library, Ipswich, at 7.30 p.m.)
- 15 January. **Institute of British Foundrymen, Slough Section.** "Coreblowing", by G. W. Fearfield. (Lecture Theatre, High Duty Alloys, Ltd., Slough, at 7.30 p.m.)
- 16 January. **Institute of British Foundrymen, Southampton Section.** Technical Film Show: "The Kitimat Story" and "Aluminium Casting". (Technical College, St. Mary's Street, Southampton, at 7.30 p.m.)
- 24 January. **Society of Chemical Industry, Corrosion Group.** Conversazione. (Battersea Polytechnic, Battersea Park Road, London, S.W.11, at 6.30 p.m.)

APPOINTMENTS VACANT

A GRADUATE METALLURGIST is required to take charge of a section engaged on problems associated with the machining and forming of ferrous and non-ferrous metals. Opportunities for research and varied investigational work. Permanent and progressive position with F.S.S.U. benefits. Commencing salary commensurate with qualifications and experience. Send full details in confidence to Box No. 419, The Institute of Metals, 17 Belgrave Square, London, S.W.1.

ELECTRON MICROSCOPIST. A vacancy exists in new and growing Research Laboratories near Cambridge for an Electron Microscopist to assist research scientists working on a variety of physical, metallurgical, and chemical problems and to maintain and operate Siemens and Metropolitan-Vickers microscopes, diffraction camera, and X-ray projection microscope. Excellent working conditions. Canteen. Free transport to and from Cambridge and Saffron Walden. For application form and further details, please apply, in writing, to The Secretary, Tube Investments Research Laboratories, Hinxton Hall, near Saffron Walden, Essex, quoting Reference 117.

FOUNDRY ENGINEER required by large industrial concern in the Midlands. Duties involve development work both in processes and plant from the initial stages right through to practical application. Though both ferrous and non-ferrous metals are concerned, the emphasis is on non-ferrous. Salary commensurate with abilities and experience. Apply, giving details, to Director of Research, Rubery Owen and Co., Ltd., Darlaston, Staffs., marking envelope "Foundry Engineer".

HIGH DUTY ALLOYS, LTD., Research Division, Slough, Bucks., requires a Mechanical Testing Engineer to work on investigations concerned with the creep and fatigue properties of aluminium- and titanium-base alloys. Candidates should preferably be of degree or equivalent standard. The salary paid will be commensurate with qualifications and experience, and the post is pensionable. Write, giving full details, to the Staff Manager, address as above.

HIGH DUTY ALLOYS, LTD., Research Division, Slough, Bucks., requires a Metallurgist to fill a vacancy in the Metallurgy Department. The work involves study of a variety of interesting problems concerning light alloys. Candidates should preferably have a degree or its equivalent, and some research experience is desirable but not essential. A pension scheme is in operation, and the salary paid will be commensurate with age, experience, and qualifications. Apply, giving full details, to the Staff Manager, address as above.

IMPERIAL SMELTING CORPORATION, LTD., has vacancies in the Development Department for Extraction Metallurgists or Physical Chemists with independence of thought, who are prepared to undertake work of a varied nature both on new developments and involving investigations into the efficiency of established processes. Applications are invited from persons with an honours degree in Metallurgy or Chemistry who have completed, or are free from, National Service obligations. Previous industrial experience, although not essential, would be advantageous. Initial applications to Personnel Manager, Imperial Smelting Corporation, Ltd., St. Andrew's Road, Avonmouth, Bristol, quoting reference DB/IM.

MELTING AND CASTING RESEARCH

A qualified metallurgist is required by THE MOND NICKEL COMPANY, LTD., at their Birmingham Research Laboratories, to conduct research associated with the melting and casting of a variety of alloys. The general objective will be to investigate ways of obtaining optimum properties in both wrought and cast forms by employing improved or novel melting and casting procedures. The properties under consideration will include mechanical properties over a wide range of temperatures, corrosion-resistance, and castability. Individual publication of results is encouraged. Salary will be in accordance with experience and qualifications. Pension and insurance schemes are in operation and, in appropriate cases, assistance can be given for housing. Applications, which will be treated in confidence, should give details of age, qualifications, and experience and be addressed to The Manager, The Mond Nickel Company, Ltd., Development and Research Dept., Thames House, Millbank, London, S.W.1. Mark envelope "Confidential L.36".

METALLURGICAL ASSISTANT required for investigational and research work in connection with wrought copper and aluminium processes. A knowledge of ferrous metallurgy desirable but not essential. H.N.C. in Metallurgy, L.I.M., or Degree. Age 21-26 years. Laboratory or works experience essential. Pension scheme, five-day week, and all welfare facilities. Details to: Personnel Manager, The Telegraph Construction and Maintenance Co., Ltd., Telcon Works, Greenwich, S.E.10.

PHYSICIST or X-ray Crystallographer with post-graduate research experience required for fundamental research group in North London laboratories. Experience in metallurgy desirable but not essential. Attractive salary according to age and experience. Write Box JM 292, LPE, 55 St. Martin's Lane, London, W.C.2.

SALES MANAGER required for manufacturers of centrifugal castings in non-ferrous alloys. Must have experience and established contacts with buyers of non-ferrous castings, not necessarily centrifugal. Good salary and commission to first-class man, age 35-40, with prospects of becoming Assistant to Managing Director. Apply Box No. 420, The Institute of Metals, 17 Belgrave Square, London, S.W.1.

THE BRITISH NON-FERROUS METALS RESEARCH ASSOCIATION requires investigators to study problems in corrosion, physical metallurgy, casting, and instrumentation fields. Applicants should have a good degree in metallurgy, chemistry, or physics. Initial salary range £700-£1000, depending on qualifications and experience. Write: Research Manager, The British Non-Ferrous Metals Research Association, 81-91 Euston Street, London, N.W.1.

THE BRITISH STEEL CASTINGS RESEARCH ASSOCIATION requires a qualified investigator with experience of X-ray crystallography for research on industrial dusts and refractory materials at new Research Laboratories at East Bank Road, Sheffield. Metallurgical experience would be an additional qualification. Applications to Director, British Steel Castings Research Association, Broomgrove Lodge, Sheffield 10.

UNIVERSITY OF BIRMINGHAM

DEPARTMENT OF INDUSTRIAL METALLURGY

Applications are invited for a Research Fellowship in the field of viscosity of molten metals. Candidates should have a degree in either physics, chemistry, or metallurgy. Salary up to £750 p.a. with F.S.S.U. allowance and facilities for higher-degree studies.

Applications should be sent to the Department of Industrial Metallurgy, The University, Edgbaston, Birmingham, 15.

G. L. BARNES,
Secretary.

THE UNIVERSITY OF SHEFFIELD

Applications are invited for THREE RESEARCH FELLOWSHIPS in METALLURGY which are offered to graduates with research experience who desire an opportunity to do metallurgical research on a subject of their choice.

THE J. H. ANDREW RESEARCH FELLOWSHIP.
THE UNITED STEEL COMPANIES' RESEARCH FELLOWSHIP.
THE TUBE INVESTMENTS RESEARCH FELLOWSHIP.

The subject for the research will be chosen in consultation with the Professor of Metallurgy, and in the case of the Andrew and United Steels Fellowships should lie broadly in the field of ferrous metallurgy. Normal tenure will be five years, but the appointment will be for two years in the first instance, and thereafter will be renewable annually. In each case the stipend for the first year will not be less than £750 per annum, and will rise by annual increments of £50 to £950. A higher stipend will be paid to a candidate with exceptional qualifications. There will be superannuation provision under the F.S.S.U. Applications (three copies), including the names and addresses of referees and, if desired, copies of testimonials, should reach the Registrar (from whom further particulars can be obtained) not later than 31 December 1956.

WELDING ENGINEER required by Orenda Engines, Ltd., Malton, Ontario. Senior appointment in the Metallurgical Division with opportunity to work on development and control of all types of welding with the newest jet-engine material, including titanium. Applicants must have at least three years' experience on welding. Salary according to qualifications.

The Company operates a non-contributory Life, Sickness, and Accident Insurance for employees and their dependants.

Contributory pension plan after two years' service.

Successful applicant will be granted assistance towards transportation to Canada.

Please apply to Orenda Engines, Ltd., 18, St. James's Square, London, S.W.1.